



US EPA Pretreatment Webcast Series

**The Pretreatment 101 Series:
Overview of Pretreatment Standards**

September 27, 2011



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Guide to Our Webcasts

- To Ask a Question – Type your question in the text box located at the bottom of your screen
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- To Complete the Evaluation – Answer questions in the slide window

Pretreatment 101 Series

- Fifth in the series
- Available webcasts:
 - Introduction to Pretreatment
 - Industrial User Waste Survey Procedures
 - POTW's Procedures for Conducting Compliance Inspections
 - POTW's Procedures for Conducting Compliance Monitoring
- www.epa.gov/npdes/training

Potential Future Topics

- Legal authority/multijurisdictional agreements
- Permits/control mechanisms
- Enforcement and Enforcement Response Plans
- Program management and record keeping
- Hauled waste programs

Overview of Pretreatment Standards

Jan Pickrel, EPA Pretreatment Coordinator,
EPA Office of Wastewater Management

Common Acronyms

CWA – Clean Water Act

NPDES – National Pollutant Discharge Elimination System

POTW – Publicly Owned Treatment Works

IU – Industrial User

SIU – Significant Industrial User

CIU – Categorical Industrial User

CFR – Code of Federal Regulations

ELGs – Effluent Limitation Guidelines

Common Terms

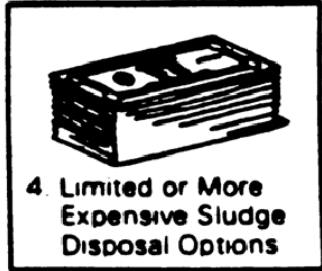
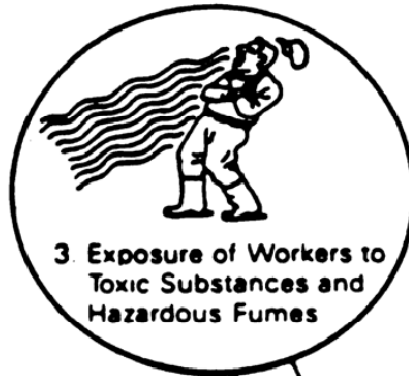
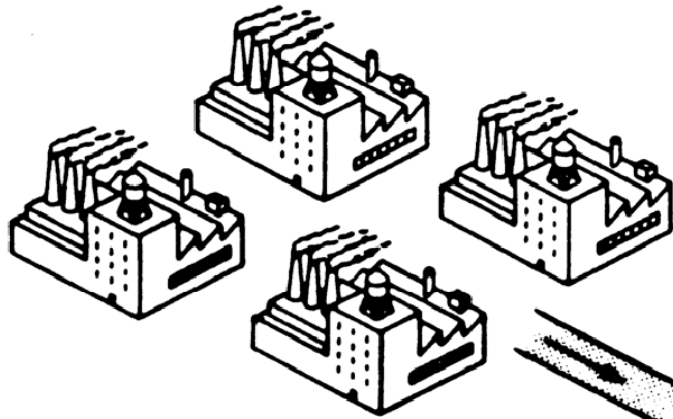
- Interference
- Pass Through
- National Pretreatment Standards or Standards
- Pretreatment Requirements
- Users

Outline of Today's Webcast

- Define the three types of national pretreatment standards
- Discuss the users associated these standards
- Discuss where these standards are applied

Purpose of the Pretreatment Program

- To prevent the introduction of pollutants into POTWs which will:
 - interfere,
 - pass through, and/or
 - be incompatible
- To improve opportunities to recycle and reclaim wastewaters and sludges
- To protect POTW workers

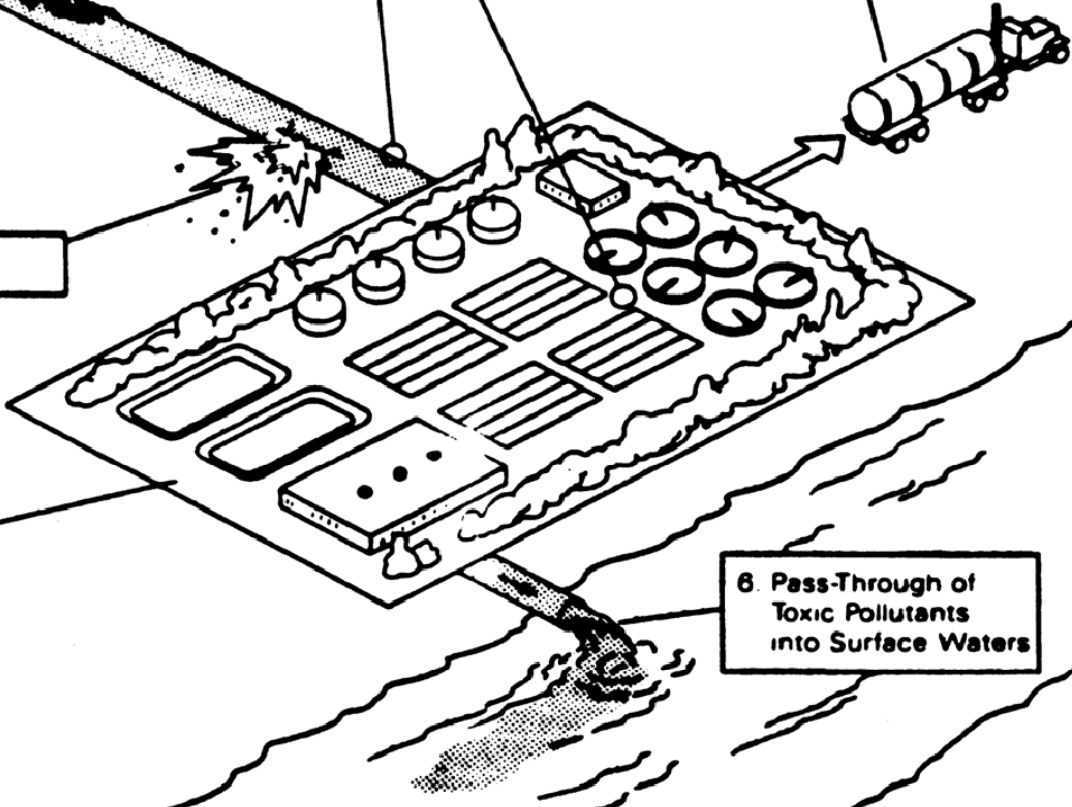


1. Corrosion of Collection System or of the Sewage Treatment Plant

2 Explosions



6. Pass-Through of Toxic Pollutants into Surface Waters



3. Exposure of Workers to Toxic Substances and Hazardous Fumes

4. Limited or More Expensive Sludge Disposal Options

5. Interference with Plant Treatment System

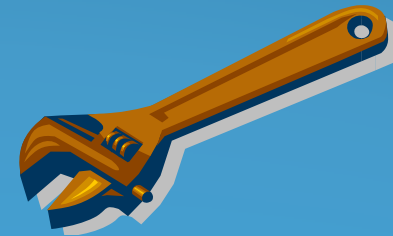
3 Types of Pretreatment Standards

1. General and specific prohibitions
2. Categorical pretreatment standards
3. Local limits

Pretreatment Standards are Tools for Achieving Program Objectives

Typically expressed as

- Numeric criteria
- Narrative prohibitions
- Best management practices (BMPs)



**Pretreatment
Standards:
General and Specific
Prohibitions**

Prohibited Discharge Standards

40 CFR 403.5(a) and (b)

- General and specific prohibitions
- Developed at the federal level and applicable to all IUs
- Intended to provide general protection for all POTWs, nationwide

General Prohibitions

40 CFR 403.5(a)

“A User may not introduce into a POTW any pollutant(s) which cause

Pass Through or Interference.

These general prohibitions and the specific prohibitions in paragraph 40 CFR 403.5(b) apply to each User introducing pollutants into a POTW whether or not the User is subject to other National Pretreatment Standards or any national, State, or local Pretreatment Requirements.”

Pass Through: 40 CFR 403.3(p)

“A Discharge which exits the POTW into waters of the U.S. in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of *any* requirement of the POTW's NPDES permit (including an increase in the magnitude or duration of a violation).”

Interference: 40 CFR 403.3(k)

“A Discharge which, alone or in conjunction with a discharge or discharges from other sources, both :

(1) Inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal; and

(2) Therefore is a cause of a violation of any requirement of the POTW's NPDES permit (including an increase in the magnitude of duration of a violation) or of the prevention of sewage sludge use or disposal in compliance with the following statutory provisions and regulations or permits issued thereunder (or more stringent State or local regulations): Section 405 of the Clean Water Act, the Solid Waste Disposal Act ((SWDA)(including title II, more commonly referred to as the Resources Conservation and Recovery Act (RCRA), and including State regulations contained in any State sludge management plan prepared pursuant to subtitle D of the SWDA), and the Clean Air Act, the Toxic Substances Control Act, and the Marine Protection, Research and Sanctuaries Act.”

Pass through and interference

Pass through – discharge that exits the POTW into waters of the U.S. in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the POTW's NPDES permit

Interference – discharge that, alone or in conjunction with a discharge or discharges from other sources, both (1) inhibits or disrupts the POTW, its treatment processes or operations, or its sludge processes, use, or disposal and (2) therefore is a cause of a violation of any requirement of the POTW's NPDES permit

Specific Prohibitions

40 CFR 403.5(b)

1. Pollutants that create a fire or explosion hazard in the POTW
2. Pollutants causing corrosive structural damage to the POTW, but in no case discharges with a pH lower than 5.0, unless the POTW is specifically designed to accommodate such discharges
3. Pollutants in amounts causing obstruction to the flow in the POTW resulting in interference
4. Any pollutants released at a flow rate or concentration that will cause interference with the POTW

Specific Prohibitions (cont.)

5. Heat in amounts that will inhibit biological activity in the POTW resulting in interference, but in no case heat in such quantities that the temperature at the POTW treatment plant exceeds 104 °F (40 °C)
6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through
7. Pollutants that result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that could cause acute worker health and safety problems
8. Any trucked or hauled pollutants, except at discharge points designated by the POTW

Answer to Quiz Question 1:

True. General and specific prohibitions do apply to all IUs.

Questions?

Effluent Limitations Guidelines and Categorical Pretreatment Standards

Jan Matuszko

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Common acronyms and terms

ELG – Effluent Limitations Guidelines and Standards

PSES – Pretreatment standards for existing sources

PSNS – Pretreatment standards for new sources

FR – Federal Register

CFR – Code of Federal Regulations

GPO – Government Printing Office

CIU – Categorical Industrial User

What are Effluent Limitations Guidelines and Standards [ELGs]?

- Nationally applicable
- Industry Sector specific
- Technology-based
 - Based on best available treatment technologies (not based on risk or impacts upon receiving waters)
- Economic achievability determination
- Different requirements for direct and indirect dischargers
 - Effluent Limitations Guidelines apply to direct dischargers (to waters of the U.S.)
 - Categorical pretreatment standards apply to indirect dischargers (to POTWs)

Overarching Goals of Categorical Pretreatment Standards

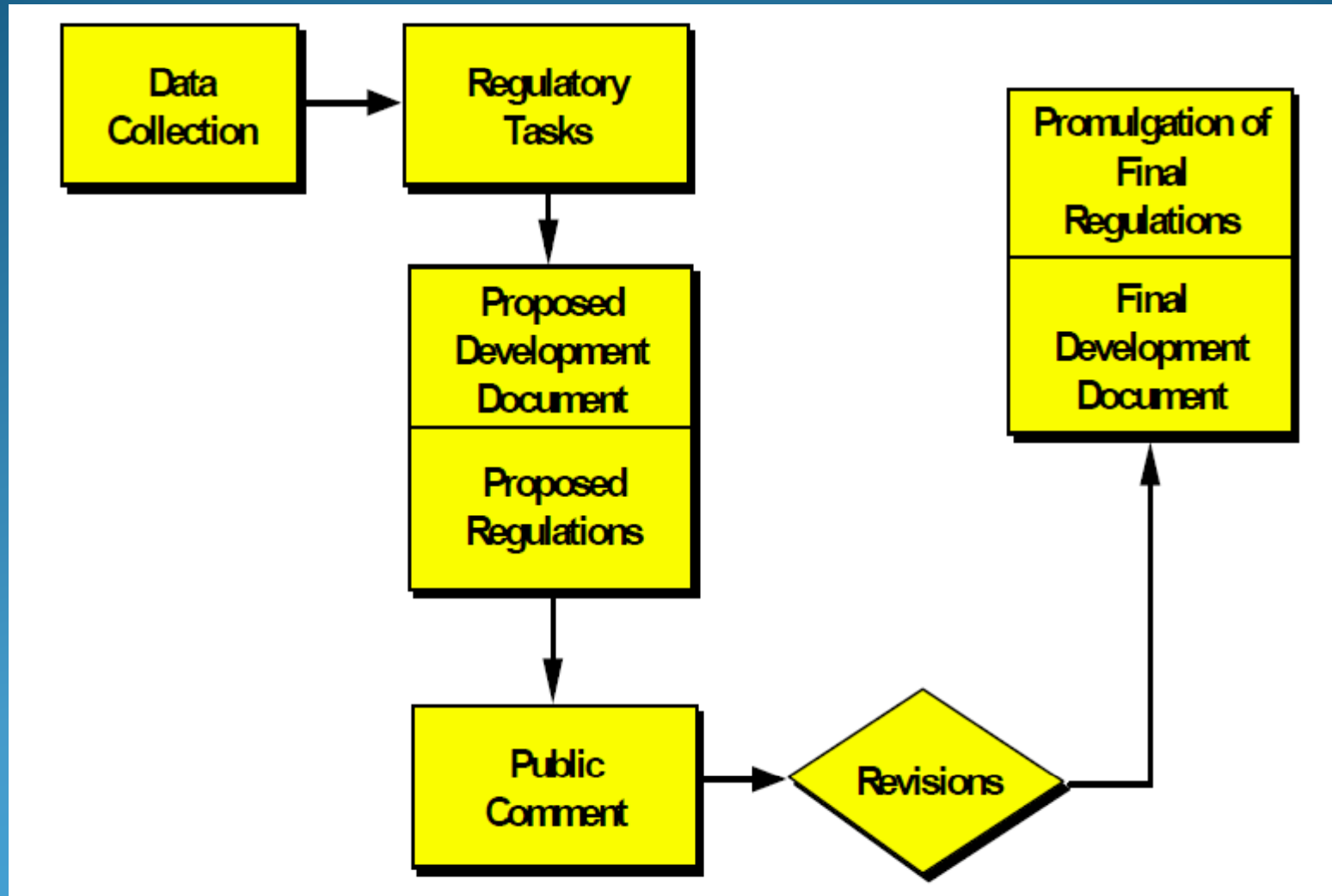
- Ensure that standards for indirect dischargers (to POTWs) are equivalent to standards for direct dischargers (to waters of the U.S.)
- Take into account the treatment capability of the POTW
- Establish “level playing field”
- Prevent “pass through” and “interference” for POTWs (subject to Secondary Treatment Standards of 40 CFR 133)

How are ELGs Identified for Revision or Development?

Effluent Guidelines Plan

- Annually review categories of dischargers with existing Standards
- Identify categories of dischargers of pollutants without existing Standards
- Establish schedule for Standards revisions or new promulgation
- Provide for public review and comment
- EPA publishes the proposed Plan in odd years and final Plan in even years

ELG Development



How Does EPA Develop ELGs for an Industrial Category?

- National Data Collection
 - Technical and financial surveys
 - Inspection of production processes
 - Inspection of wastewater treatment systems
 - Sampling of Wastewater
 - Stakeholder involvement

How does EPA Develop ELGs for an Industrial Category? (cont.)

- Technology Assessment
 - Characterize wastewater and technology performance
 - Subcategorization
 - Regulated pollutants
 - Identify cost to install new technologies & process changes
 - Identify pollutant reductions associated with new technologies and process changes
 - Derive numerical standards

How does EPA Develop ELGs for an Industrial Category? (cont.)

- Economic analysis
 - Economic achievability; Market Effects; Cost Effectiveness
 - Value of Environmental & Human Health Benefits
- Environmental assessment
 - Pollutant transport & Exposure pathways, hazards
 - National & Local Impacts
 - National & Local Benefits
- Public review and comment

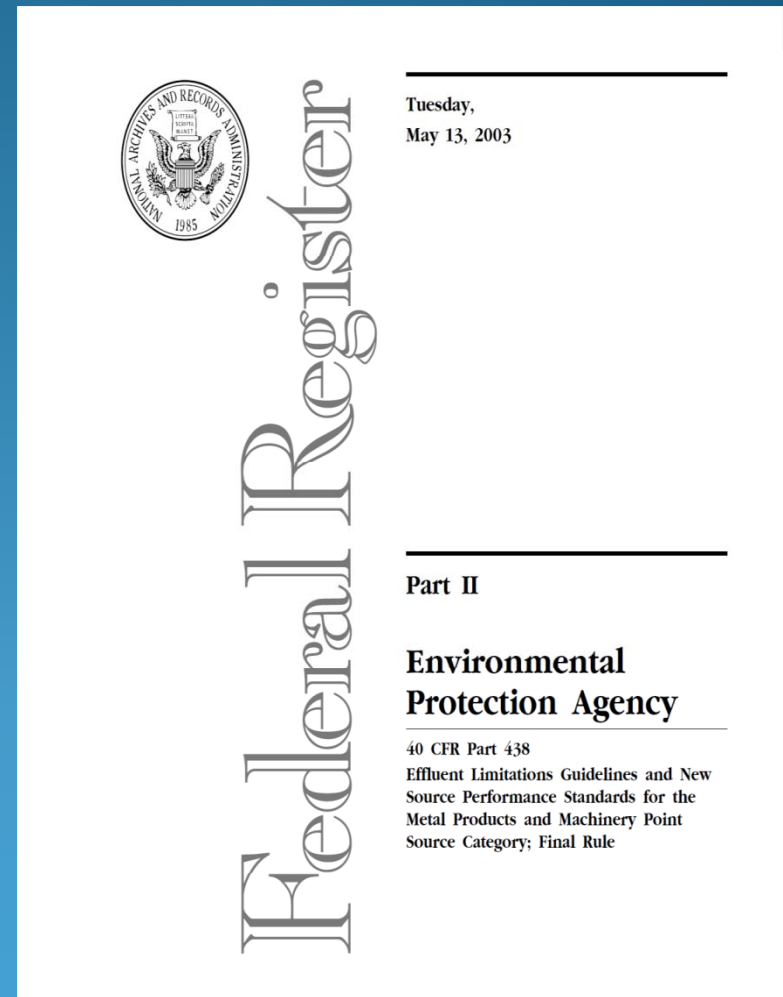
Where can ELGs be found?

Published in the Federal Register (FR)

- Proposed regulations
- Final regulations

40 CFR Parts 405-471

<http://www.gpo.gov/fdsys/>



Contents of Individual Effluent Guidelines and Standards

General Provisions:

- Applicability
- Definitions
- Monitoring and Reporting requirements
- Compliance dates

Subparts:

- Special definitions
- Standards

Contents of Individual Effluent Guidelines and Standards (cont.)

Standards for Direct Dischargers (NPDES permits):

- Best Practicable Technology - BPT
- Best Conventional Technology - BCT
- Best Available Technology Economically Achievable - BAT
- New Source Protection Standards – NSPS

Contents of Individual Effluent Guidelines and Standards (cont.)

Types of Standards for Indirect Dischargers (Industrial Users):

- Pretreatment Standards for Existing Sources - PSES
- Pretreatment Standards for New Sources – PSNS

“Categorical Pretreatment Standards”

“CIUs”

Contents of Individual Effluent Guidelines and Standards (cont.)

Direct Discharge Standards vs. Pretreatment Standards

- Categorical Pretreatment Standards:
- Typically do not regulate conventional pollutants
 - Biochemical Oxygen Demand, Oil and Grease, pH, Total Suspended Solids, fecal coliform
- Focus on toxic and non-conventional pollutants

PSES

- Is NOT a new source
- May be less stringent than PSNS
- Assumes need for retrofit of treatment technology/practices
- Compliance date = specified in regulation (no more than 3 years after effective date)

PSNS

- Is a new source
- Often more stringent than PSES
- Opportunity to install best and most efficient treatment technology/practices
- Compliance date = ASAP (not to exceed 90 days from discharge)

See Definition of New Source: 40 CFR 403.3(m)
Additional Guidance: “New Source Memorandum”

<http://www.epa.gov/npdes/pretreatment>

How are ELGs Implemented?

Categorical Standards:

- May be enforced via “Control mechanisms” (permits) issued by control authority (typically the receiving POTW)
- Are “self implementing”
- Are typically applied at “end of pipe” but may be required “in process”

How are ELGs Expressed?

- Numeric values for specific pollutants
 - Concentration limits (e.g., “mg/l”)
 - Mass limits based on production rates (e.g., “kg/1000 kkg or (pounds per million pounds) of metal poured”)
 - Mass limits based on a concentration standard (then multiplied by a facility’s process wastewater flow)
- Best Management Practices
- Prohibitions, including “No discharge”



How are ELGs Expressed? (cont.)

- Do not mandate use of a specific technology
- May include specific reporting or recordkeeping specific to the industry
- May state “must comply with 40 CFR 403”
- (such facilities aren’t considered a CIU)

Concentration-based limits

Example:
Metal Finishing
40 CFR 433.17
PSNS

§ 433.17 Pretreatment standards for new sources (PSNS).

(a) Except as provided in 40 CFR 403.7, any new source subject to this subpart that introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for new sources (PSNS):

PSNS

Pollutant or pollutant property	Maximum for any 1 day	Monthly average shall not exceed
Milligrams per liter (mg/l)		
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	

(b) Alternatively, for industrial facilities with cyanide treatment, and upon agreement between a source subject to these limits and the pollution control authority, the following amenable cyanide limit may apply in place of the total cyanide limit specified in paragraph (a) of this section:

Pollutant or pollutant property	Maximum for any 1 day	Monthly average shall not exceed
Milligrams per liter (mg/l)		
Cyanide (A)	0.86	0.32

(c) No user subject to the provisions of this subpart shall augment the use of process wastewater or otherwise dilute the wastewater as a partial or total substitute for adequate treatment to achieve compliance with this limitation.

(d) An existing source submitting a certification in lieu of monitoring pursuant to §433.12 (a) and (b) of this regulation must implement the toxic organic management plan approved by the control authority.

[48 FR 32485, July 15, 1983; 48 FR 43682, Sept. 26, 1983]

Production-based limits

Example:

Metal Molding and Casting

Subpart A – Aluminum

Casting Subcategory

40 CFR 464.15, PSES

Subparts (a) and (b) shown

(additional subparts not shown)

§ 464.15 Pretreatment standards for existing sources.

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve the following pretreatment standards for existing sources.

(a) Casting Cleaning Operations.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	kg/1,000 kkg (pounds per million pounds) of metal poured	
Copper (T)	0.0771	0.0421
Lead (T)	0.0791	0.039
Zinc (T)	0.114	0.0431

(b) Casting Quench Operation.

PSES

Pollutant or pollutant property	Maximum for any 1 day	Maximum for monthly average
	kg/1,000 kkg (pounds per million pounds) of metal poured	
Copper (T)	0.0093	0.0051
Lead (T)	0.0096	0.0047
Zinc (T)	0.0138	0.0052
TT0	0.029	0.0095
Oil and grease (for alternate monitoring)	0.363	0.121

Mass limits based on a concentration standard

Example:

Organic Chemicals and
Synthetic fibers

40 CFR 414.24 & 414.26

§ 414.25 Pretreatment standards for existing sources (PSES).

Except as provided in 40 CFR 403.7 and 403.13, any existing source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve discharges in accordance with §414.111.

[58 FR 36892, July 9, 1993]

§ 414.26 Pretreatment standards for new sources (PSNS).

Except as provided in 40 CFR 403.7 any new source subject to this subpart which introduces pollutants into a publicly owned treatment works must comply with 40 CFR part 403 and achieve discharges in accordance with §414.111.

[58 FR 36892, July 9, 1993]

40 CFR 414.111 (excerpt)

§ 414.111 Toxic pollutant standards for indirect discharge point sources.

(a) Any point source subject to this subpart must achieve discharges not exceeding the quantity (mass) determined by multiplying the process wastewater flow subject to this subpart times the concentration listed in the following table.

(b) In the case of lead, zinc, and total cyanide the discharge quantity (mass) shall be determined by multiplying the concentrations listed in the following table for these pollutants times the flow from metal-bearing waste streams for metals and times the flow from the cyanide-bearing waste streams for total cyanide. The metal-bearing waste streams and cyanide-bearing waste streams are defined as those waste streams listed in Appendix A of this part, plus any additional OCPSF process wastewater streams identified by the control authority on a case-by-case basis as metal or cyanide bearing based upon a determination that such streams contain significant amounts of the pollutants identified above. Any such streams designated as metal or cyanide bearing must be treated independently of other metal or cyanide bearing waste streams unless the control authority determines that the combination of such streams, prior to treatment, with the Appendix A waste streams will result in substantial reduction of these pollutants. This determination must be based upon a review of relevant engineering, production, and sampling and analysis information.

Effluent characteristics	PSES and PSNS ¹	
	Maximum for any one day	Maximum for any monthly average
Acenaphthene	47	19
Anthracene	47	19
Benzene	134	57
Bis(2-ethylhexyl) phthalate	258	95
Carbon Tetrachloride	380	142
Chlorobenzene	380	142

BMPs as categorical standards

- Certification is allowed in lieu of monitoring
- Specified pollutants
- Management plan must be approved and implemented
- Examples:
 - Electroplating (40 CFR 413.03)
 - Pulp, Paper, and Paperboard (40 CFR 430.02)
 - Metal Finishing (40 CFR 433.12)
 - Transportation Equipment Cleaning (PSES & PSNS – various subparts)
 - Electrical and Electronic Components (40 CFR 469.13)

Prohibitions in ELGs

Examples:

40 CFR 415.36 – Inorganic chemicals manufacturing, Subpart C calcium carbide production subcategory, PSNS

There shall be no discharge of process wastewater pollutants to navigable waters.

40 CFR 423.16(a) – Steam electric power generating, PSES

There shall be no discharge of polychlorinated biphenol compounds such as those used for transformer fluid.

40 CFR 461.14(b) – Battery manufacturing, Subpart A cadmium subcategory, PSES

There shall be no discharge allowance for process wastewater pollutants from any battery manufacturing operation other than those battery manufacturing operations listed above.

Industrial categories without *specific* PSES/PSNS

Nonspecific standard:

“Any existing source subject to this subpart that introduces process wastewater pollutants in a POTW must comply with 40 CFR Part 403.”

ELG resources



Water: Industry Effluent Guidelines

You are here: [Water](#) » [Science & Technology](#) » [Wastewater Technology](#) » [Industry Effluent Guidelines](#) » [Industrial Regulations](#)

Industrial Regulations

Effluent guidelines are national standards for wastewater discharges to surface waters and publicly owned treatment works (sometimes called municipal sewage treatment plants). We issue effluent guidelines for categories of existing sources and new sources under Title III of the Clean Water Act. The standards are technology-based (i.e. they are based on the performance of treatment and control technologies); they are not based on risk or impacts upon receiving waters.



[Best Management Practices for Unused Pharmaceuticals at Health Care Facilities - Draft for Public Comment](#)

[Questionnaire for Alaskan Seafood Processors](#)

On this page:

- [Regulations Under Development](#)
- [Existing Regulations](#)
- [Other Publications Related to Effluent Guidelines](#)

Regulations Under Development

- [Airport Deicing](#)
- [Chlorine and Chlorinated Hydrocarbon \(CCH\)](#)
- [Construction and Development](#)
- [Dental Amalgam Effluent Guideline](#)
- [Drinking Water Treatment](#)
- [Steam Electric Power Generating](#)

Existing Regulations

The table below lists the effluent guidelines promulgated by EPA, sorted alphabetically by industry category. The links in the 'Industry Category' column provide an overview of the regulation and available EPA publications for the category. The links under '40 CFR' go directly to the [Code of Federal Regulations \(CFR\)](#).

For many of the newer guidelines (especially those promulgated after 1995), we provide individual industry pp. with the Federal Register notices of proposed and final rules, supplemental notices, fact sheets and other background information. For older guidelines, individual pp. are being developed. We provide an interim link to an EPA staff contact.

Industry Category	40 CFR Part	First Promulgated	Limitations and Standards
Aluminum Forming	467	1983	BPT, BAT, NSPS, PSES, PSNS
Asbestos Manufacturing	427	1974	BPT, BCT, BAT, NSPS
Battery Manufacturing	461	1984	BPT, BAT, NSPS, PSES, PSNS
Canned and Preserved Fruits and Vegetable Processing	407	1974	BPT, BCT, NSPS, PSES, PSNS
Canned and Preserved Seafood (Seafood Processing)	408	1974	BPT, BCT, NSPS
Carbon Black Manufacturing	458	1978	BPT, BAT, NSPS, PSNS
Cement Manufacturing	411	1974	BPT, BCT, BAT, NSPS
Centralized Waste Treatment	437	2000	BPT, BCT, BAT, NSPS, PSES, PSNS
Coal Mining	434	1985	BPT, BAT, NSPS
Coil Coating	465	1983	BPT, BAT, NSPS, PSES, PSNS
Concentrated Animal Feeding Operations (CAFO)	412	1974	BPT, BCT, BAT, NSPS, PSNS
Concentrated Aquatic Animal Production (Aquaculture)	451	2004	BPT, BAT, BCT, NSPS
Copper Forming	468	1983	BPT, BAT, NSPS, PSES, PSNS
Dairy Products Processing	405	1974	BPT, BCT, NSPS
Electrical and Electronic Components	469	1983	BPT, BCT, BAT, NSPS, PSES, PSNS
Electroplating	413	1981	PSES
Explosives Manufacturing	457	1976	BPT
Ferrous Alloy Manufacturing	424	1974	BPT, BCT, BAT, NSPS
Fertilizer Manufacturing	418	1974	BPT, BCT, BAT, NSPS, PSNS
Glass Manufacturing	426	1974	BPT, BCT, BAT, NSPS, PSNS
Grain Mills Manufacturing	406	1974	BPT, BCT, NSPS, PSNS
Gum and Wood Chemicals	454	1976	BPT
Hospitals	460	1976	BPT
Ink Formulating	447	1975	BPT, BAT, NSPS, PSNS
Inorganic Chemicals	415	1982	BPT, BCT, BAT, NSPS, PSES, PSNS

<http://water.epa.gov/scitech/wastetech/guide/industry.cfm>

ELG resources

- EPA's Effluent Guidelines and Standards Website
<http://water.epa.gov/scitech/wastetech/guide/index.cfm>
- EPA's "ELG" Industrial Wastewater Contacts
<http://water.epa.gov/scitech/wastetech/guide/contact.cfm#elg-list>
- EPA's Pretreatment Standards and Limits Website
<http://cfpub.epa.gov/npdes/pretreatment/pstandards.cfm#categorical>
- Regional Pretreatment Coordinator

Answer to the Quiz Question 2

The correct answer is C.

Only PSES and PSNS are Categorical Pretreatment Standards.

Questions?

Answer to Quiz Question 3

The correct answer is D. All of the above. Effluent guidelines and categorical standards are technology-based, economically achievable, and industry-sector specific.

Pretreatment Standards: Local Limits

Local Pretreatment Standards

- Required for all approved pretreatment programs (40 CFR 403.5(c) and 403.8(f)(4))
- Specifically developed by each POTW
- Protection of the POTW's:
 - Collection and treatment systems
 - Personnel
 - Sludge quality
 - Receiving waters' quality

Local Pretreatment Standards

Can be expressed as:

- Pollutant-specific limits
- Additional specific narrative prohibitions
- Industrial user management plans
- Case-by-case discharge limits







Local Limits

- Must be technically-based
- Implement prohibitions at 40 CFR 403.5(a) and (b)
- Developed for each pollutant of concern
- Are Pretreatment Standards

Implementing Local Limits

- POTW selects its allocation method and applicable IUs
- Limits are applied at the end-of-pipe
 - point of the IU's discharge to the collection system
- Authority to establish local limits via legal authority
- Implementing established local limits via control mechanisms

Applicability of Pretreatment Standards

	General and Specific Prohibitions	Categorical Pretreatment Standards	Local Limits
All IUs			May apply; depends on POTW ordinance and permit provisions
SIUs			Generally apply; may depend on allocation method
CIUs			Generally apply; may depend on allocation method

Summary of Pretreatment Standards

	General and specific prohibitions	Categorical pretreatment standards	Local limits
Development	Established at the federal level.	Established at the federal level.	Developed by the POTWs.
Reference	40 CFR 403.5(a) & (b)	40 CFR Parts 405–471	Requirements for development found in 40 CFR 403.5(c) & 403.8(f)(4). Local limits are often found in the local sewer use ordinance.
Applicability	All IUs	CIUs	Commonly all IUs or all SIUs, but depends on the allocation method used when developing limits.
Purpose	Provide for general protection of the POTW. Categorical pretreatment standards or local limits may be more stringent.	Minimum standards based on available treatment technology and pollution prevention measures for controlling nonconventional and toxic pollutants that could cause pass through, interference, and such at the POTW. Local limits may be more stringent.	Provide site-specific protection for a POTW and its receiving waters. Categorical standards may be more stringent.

All standards are considered pretreatment standards for the purpose of CWA section 307(d), and therefore all standards, including local limits developed in accordance with 40 CFR 403.5(c), are enforceable by EPA and the state even though they might be developed at the local level. A POTW is responsible for identifying standard(s) applicable to each IU and applying the most stringent requirements where multiple provisions exist. Compliance with imposed standards can be achieved by any of the following: implementing BMPs, developing a pollution prevention program, or installing pretreatment.

Answer to Quiz Question 4

The correct answer is F. Both specific and general prohibitions, and local limits protect a specific POTW.

Questions?

Speaker contact information

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Participation Certificate

- If you would like to obtain participation certificates for multiple attendees, type the link below into your web browser
- You can type each of the attendees' names in and print the certificates
- http://www.epa.gov/npdes/outreach_files/pretreatment_cert_092711.pdf